Attorney Docket # 5367-223PUS Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of Dominik EISERT et al. Serial No.: 10/572,655 Filed: March 6, 2007 For: Radiation-Emitting Thin-Film Semiconductor Chip	Examiner: LAM, Cathy N. Group Art: 2811

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PRE-APPEAL BRIEF REQUEST FOR REVIEW

SIR:

This is a Request for a Panel Review of Issues on Appeal. A Notice of Appeal is filed concurrently herewith in response to the final Office Action issued June 29, 2010. No amendments are being filed with this Request.

Arguments supporting the Request for Review begin on page 2.

ARGUMENTS

The matter to be reviewed in this Request is whether the Examiner has established a *prima facie* case of obviousness under 35 U.S.C. § 103(a) against claims 1-2, 4-8, 10-18, and 44-61 based on U.S. Patent No. 6,291,839 to Lester.

A. Independent Claims 1 and 46

Independent claims 1 and 46 each recite "a patterned region of the multilayer structure that adjoins the second main face of the multilayer structure is patterned by either one- or two-dimensional depressions forming convex elevations." The Examiner asserts that Lester's layer 16 is patterned by one- or two- dimensional depressions forming truncated pyramids (see bottom of page 2 of the Office Action). Applicants disagree.

Lester teaches a light emitting device (LED) having a finely-patterned reflective contact. Lester explicitly teaches that:

> The top surface of the LED has been roughened, preferably in alignment with the openings in the contact. This may be achieved by etching the GaN in a self-aligned fashion during the same lithographic step used to pattern the contact. The etched holes can extend into the p-layer 16 or can be etched as deep as the substrate 8. (See col. 5, ll. 8-14 of Lester; emphasis added.)

In light of the above teachings by Lester, one skilled in the art will appreciate that Lester merely teaches forming etched holes in a continuous layer 16. When such etched holes were viewed in a top down direction with the contact 20 removed, they are likely to resemble a pattern similar to the finely spaced pattern of openings in the contact 20, as is shown in Fig. 1 and disclosed in column 3, lines 1-3 of Lester.

There are neither one-dimensional nor two-dimensional depressions in Lester, much less ones "forming convex elevations" as recited in independent claims 1 and 46. If the finely spaced pattern of openings in Lester's contact 20 are considered as the claimed depressions, which applicants disagree, such finely spaced pattern of openings are neither one-dimensional nor two-

dimensional, as are the claimed depressions recited in independent claims 1 and 46. Accordingly, Lester's structure clearly differs from those of the claimed invention (*see, also, applicants' illustration submitted with the last-filed Amendment and containing Figures A to C comparing perspective views of the structures according to the claimed invention to Lester*).

In the Office Action, the Examiner incorrectly interprets Fig. 5 of Lester to show convex elevations (see pg. 2 of the Office Action). Fig. 5 of Lester is a sectional view of the multilayers revealing etched holes in Lester's LED device and thus cannot be interpreted to show any convex elevations as asserted in the Office Action. Therefore, Lester does not teach the above-recited claim features of independent claims 1 and 46 for at least the above reasons.

Moreover, Lester's layer 20 with etched holes is a current-spreading layer used to spread the current for driving Lester's device over the entire p-side (see, e.g., col. 3, ll. 11-15 or col. 2, ll. 18-23 of Lester). Consequently, one skilled in the art would not modify Lester's etched holes to one- or two-dimensional depressions forming convex elevations as such proposed convex elevations would not allow for a continuous layer 20 necessary for spreading current impressed by p-contact pad 21 over the entire p-side (see Fig. 1 of Lester) and thus render Lester inoperable. Therefore, the above-recited features of independent claims 1 and 46 are not obvious over Lester.

In the "Response to Arguments" section of the Final Office Action, the Examiner states that Fig. 5 of Lester teaches the above-recited claim features of independent claims 1 and 46 based on the findings that the cross sectional view in Lester (i.e., Fig. 5) is not different from the cross sectional view of the claimed invention of Fig. 1 (see item no. 4 in Office Action). Applicants disagree and assert that the Examiner's findings are inadequate to support the above conclusion. The mere fact that two objects have the same cross-section does not necessarily mean they have the same structure. For example, both a ball and circular cylinder can have a circular cross-sectional shape, but are of different structures. Therefore, the similar cross

sectional shapes in Fig. 5 of Lester and Fig. 1 of the subject application do not suggest that Lester teaches the above-recited claim features of independent claims 1 and 46.

Indeed, Fig. 5 of Lester depicts only a sectional view of the LED and shows the etched holes formed into the p-type layer 16. As stated above, the top surface of Lester's LED has been roughened to align with the openings in the contact by etching the GaN (see, e.g., col. 5, ll. 10-12 of Lester). The formation of the etched holes in Lester does not result in a patterned region having multiple convex elevations as recited in independent claims 1 and 46. Instead, the p-type layer 16 of Lester has a single elevation (the continuous region surrounding the holes).

With respect to the Examiner's response to applicants' previous arguments concerning the continuous layer 20 necessary for spreading current over the entire p-side (see page 13 of the Office Action), applicants clarify that such arguments are intended and proper to prove lack of motivation to modify Lester's etched holes to arrive at the claimed one- or two-dimensional depressions.

In view of all the above reasons, independent claims 1 and 46 each patentably distinguish over Lester and are allowable.

B. Dependent Claims

Claims 2, 48, 10-18, 44-45, and 47-61 depend, directly or indirectly, from allowable independent claim 1 or 46 and are therefore are allowable therewith.

In addition, these dependent claims each include features which serve to even more clearly distinguish the claimed invention over the applied prior art. For example, claims 45 and 47 each recite that "the epitaxial multilayer structure of the semiconductor chip is free of a growth substrate." When rejecting claims 45 and 47, the Examiner alleges that Lester teaches an epitaxial multilayer of the semiconductor chip free of a growth substrate (see page 9 of the Office action). Applicants disagree. Figs. 1 and 4-5 of Lester show LEDs having epitaxially formed layers 12, 14 and 16 on a substrate. These layers of Lester are fabricated on the substrate

(see col. 2, ll. 57-60 of Lester) and are epitaxially grown (see col. 4, ll. 26-31 and col. 5, ll. 25-28). In other words, Lester discloses a semiconductor chip where the epitaxial multilayers are connected to a growth substrate. Therefore, Lester does not teach the claim features recited in claims 45 and 47.

With regard to claims 62 and 68, the Examiner alleges that Lester teaches the second main face to be a non-continuous layer, as the surface has many recesses (see page 10 of the Office Action). Applicants disagree. Lester's etched holes are formed in a continuous layer, the surface of the continuous layer extends continuously around the etched holes (see, e.g., Fig. 1 of Lester). In contrast, the one- or two-dimensional depressions in the subject application segregate the layer into convex elevations, resulting in a noncontinuous layer. Therefore, Lester does not teach the claim features recited in claims 62 and 68.

With regard to claims 63 and 69, the Examiner alleges that Lester's reflective layer 9 is in direct contact with the epitaxial multilayer structure (see pages 10-11 of the Office Action). Applicants disagree. In the Examiner's cited portions of Lester (i.e., Fig. 5), the reflective layer 9 is in contact with the substrate and opposite from the epitaxial multilayer structure containing the n-type layer, the emission layer and the p-type layer. Consequently, there is no direct contact between the reflective layer 9 and the epitaxial multilayer structure in Lester.

In view of the foregoing, the subject patent application is in condition for allowance.

Respectfully submitted,
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